

WHAT IS CLAIMED IS:

1-40 (Canceled)

41. (New) A binding resin particularly for manufacturing articles, comprising the following components:

5 (A) a powder that comprises silica and one or more hardening agents; and

(B) a solution of at least one silicate of an alkaline metal.

42. (New) The binding resin according to claim 41, further comprising at least one of the following optional ingredients:

10 (C) a powder comprising at least one pozzolanic inorganic binding agent;

(D) a powder comprising at least one pozzolanic binding agent with large specific surface area;

(E) a solution comprising at least one waterproofer;

15 (F) a powder comprising refractory clay comprising aluminum silicate;

(G) a powder comprising at least one water-repellent agent in solid form.

43. (New) The binding resin according to claim 41, further comprising
20 at least one element for each one of the following groups:

Group (1): (A) a powder comprising silica and one or more hardening agents;

Group (2): (B) a solution of at least one silicate of an alkaline metal;

Group (3):

25 -- (C) a powder comprising at least one pozzolanic inorganic binding agent;

-- (D) a powder comprising at least one pozzolanic binding agent with large specific surface area; and

-- (E) a solution comprising at least one waterproofer;

Group (4): (F) a powder comprising refractory clay comprising aluminum silicate; and

Group (5): (G) a powder comprising at least one water-repellent agent in solid form.

5 44. (New) The binding resin according to claim 42, further comprising all the ingredients (A) to (G).

45. (New) The binding resin according to claim 41, further comprising the following components:

10 (A) a powder comprising silica and one or more hardening agents in an amount comprised between 15 and 85% by weight on the final weight of the mixture; and

(B) a solution of at least one silicate of an alkaline metal in an amount comprised between 15 and 85% by weight on the final weight of the mixture.

15 46. (New) The binding agent according to claim 42, further comprising at least one of the following optional ingredients:

(C) a powder comprising at least one pozzolanic inorganic binding agent in an amount comprised between 4 and 10% by weight on the final weight of the mixture;

20 (D) a powder comprising at least one pozzolanic binding agent with high specific surface area, in an amount comprised between 5 and 15% by weight on the final weight of the mixture;

(E) a solution comprising at least one waterproofer in an amount comprised between 1 and 2% by weight on the final weight of the mixture;

25 (F) a powder comprising refractory clay, comprising aluminum silicate in an amount comprised between 5 and 40% by weight on the final weight of the mixture;

(G) a powder comprising at least one water-repellent agent in solid form in an amount comprised between 0.1 and 1% by weight on the final weight of the mixture.

30 47. (New) The binding resin according to claim 41, wherein

component (A) comprises 10 to 99.9% by weight of silica in powder form, mixed with an amount comprised between 0.1 and 20% by weight on the total of the powder of at least one hardening agent.

48. (New) The binding resin according to claim 41, wherein the
5 hardening agent is selected from the group that comprises polyhydroxyl alcohol esters and alkylene carbonate esters.

49. (New) The binding resin according to claim 41, wherein in component (B) the solution is an aqueous solution.

50. (New) The binding resin according to claim 41, wherein in
10 component (B) said alkaline metal is selected from the group that comprises sodium, potassium and a mixture thereof.

51. (New) The binding resin according to claim 50, wherein the aqueous solution of alkaline metal silicate has a weight ratio between SiO_2 and Na_2O comprised between 1.5:1 and 4.0:1 or a weight ratio between SiO_2
15 and K_2O comprised between 1.5:1 and 4.0:1.

52. (New) The binding resin according to claim 42, wherein component (C) comprises at least one blast furnace slag.

53. (New) The binding resin according to claim 52, wherein said blast furnace slag comprises calcium oxides in an amount of approximately 40%
20 by weight, silica in an amount of approximately 30% by weight, and alumina in an amount of approximately 10% by weight, the quantities being variable according to the source material from which the slag is derived.

54. (New) The binding resin according to claim 42, wherein component (D) is constituted by condensed silica fume.

25 55. (New) The binding resin according to claim 54, wherein the condensed silica fume is an amorphous powder with spheroidal granules, a bulk density comprised in the range of 0.60 ± 0.02 kg/l, and a specific surface area equal to, or greater than, $15 \text{ m}^2/\text{g}$.

56. (New) The binding resin according to claim 42, wherein the
30 waterproofer in component (E) is constituted by a solution of at least one

alkylsiliconate.

57. (New) The binding resin according to claim 56, wherein said solution is an aqueous solution.

58. (New) The binding resin according to claim 56, wherein said
5 alkylsiliconate is present in an amount comprised between 1 and 3% by weight on the total weight of the mixture.

59. (New) The binding resin according to claim 56, wherein said alkylsiliconate is potassium methylsiliconate.

60. (New) The binding resin according to claim 42, wherein the solid
10 water-repellent agent in ingredient (G) is constituted by at least one alkyl alkoxysiloxane.

61. A method for producing a binding resin particularly for manufacturing articles, comprising the step of mixing a powder that comprises silica and one or more hardening agents with a solution of at least
15 one silicate of an alkaline metal.

62. (New) The method according to claim 61, further comprising the additional steps of mixing ingredients (A) and (B) with at least one of the optional ingredients selected from the group that consists of (C), (D), (E), (F), and (G).

20 63. (New) The method according to claim 62, wherein the solid ingredient (A) is mixed separately with all the optional solid components that are present and are selected from the group that consists of ingredients (C), (D) and (G) and mixtures thereof, in that the liquid component (B) is mixed separately with the other optional liquid component (F) if present, and
25 the solid and liquid components are mixed together at a later time.

64. (New) The method according to claim 63, wherein component (G), if present, is the first of the solid ingredients to be mixed with (A).

65. (New) The method according to claim 63, further comprising the steps of:

30 (a) mixing a powder comprising silica and one or more hardening

agents with a powder comprising at least one water-repellent agent in solid form;

(a1) mixing the product of step (a) with a powder comprising at least one pozzolanic inorganic binding agent;

5 (a2) mixing the product of step (a1) with a powder comprising at least one pozzolanic binding agent with high specific surface area;

(a3) mixing the product of step (a2) with a powder comprising refractory clay that comprises aluminum silicate;

(b) mixing a solution of at least one silicate of an alkaline metal with a
10 solution that comprises at least one waterproofer; and

(c) mixing the product of step (a3) with the product of step (b).

66. (New) The method according to claim 65, further comprising the steps of:

(d) mixing the binding resin obtained according to the method of
15 claim 65 with at least one inert material;

(e) pouring the mixture obtained from step (d) into a mold or form;

(f) allowing the product to cure.

67. (New) The method according to claim 66, wherein the inert material is used in an amount between 10 and 70% by weight.

20 68. (New) The method according to claim 61, wherein the inert material is selected from the group that comprises pumice, perlite, expanded clay (of various particle sizes), vermiculite, polystyrene, straw, cork, kenaf, sawdust and wood derivatives (for example paper and cardboard), plastics and its derivatives, polyurethane (in any physical aspect or formulation
25 thereof), aluminum, iron and metallic alloys, glass and its derivatives, rock, lava lapilli, carbon fiber, natural and/or synthetic fibers, textile fibers, metallic fibers, and mixtures thereof.

69. (New) The method according to claim 66, wherein mixing step (d) lasts 5 minutes to 3 hours.

70. (New) The method according to claim 66, wherein step (f) for curing the product lasts 5 minutes to 40 days.

71. (New) The method according to claim 70, wherein step (f) for curing the product lasts 20 to 40 days if performed in natural conditions.

5 72. (New) The method according to claim 70, wherein the step (f) for curing the product lasts 5 to 10 days if performed in a heated environment (dryer) with hot air at a temperature comprised between 40 and 70 °C.

73. (New) The method according to claim 70, wherein step (f) for curing the product lasts 10 to 30 minutes and more if performed in an
10 autoclave at high pressure.

74. (New) The method according to claim 70, wherein the step (f) for curing the product lasts 5 to 20 minutes and more if it is performed with microwave technologies.

75. (New) The method according to claim 66, wherein the product
15 curing step (f) is performed in the presence of CO₂ at 25 °C, applied under pressure for a time that can vary from 5 to 30 minutes.

76. (New) A product manufactured starting from a binding resin according to claim 41.

77. (New) The product according to the method of claim 61.

20 78. (New) The product of claim 76, further comprising internally a reinforcement constituted by at least one element selected among metallic nets, plastic nets, synthetic fibers and materials conventionally used to improve the strength characteristics of the article.

79. (New) The article made from the binding resin of claim 41 suitable
25 for building, naval, aeronautical and transportation sectors.

80. (New) The article of claim 79, suitable for insulation of roofs, manufacture of raised floors, provision of mechanical parts having particular characteristics, provision of components for motors, manufacture of partitions and expendable walls, erection of buildings, manufacture of
30 flameproof barriers for doors and bulkheads for vehicles and watercraft,

manufacture of thermally insulating panels in refrigeration and conditioning systems, manufacture of refrigeration cells, manufacture of insulating claddings and the like, and manufacture of soundproofing panels.